An Extendible Software Platform for the Construction and Deployment of Intelligent Agents

STATMENT OF CLAIMS

The embodiments of the invention in which an exclusive property or privilege is claimed are defined as follows:

1. A computer-based software system, called the agent platform, that provides integrated services for the deployment of intelligent software agents comprising:

   A system for creating, storing, retrieving, moving and removing autonomous software modules called intelligent software agents.

   An extendible service management subsystem that allows services to be easily added and removed from the platform and enables software agents to automatically access these platform services.

   An messaging infrastructure that allows developers to add message handling functionality at three levels, the message transport layer, the data encoding and encryption layer, and the message semantics layer.

   An event mechanism, that allows agents to react to changes in their environment. This system provides an Agent Context which developers can extend to support alternative data representation schemes.

   Infrastructure for allowing agents to interpret user-defined rules and execute services based upon those rules that involves the incorporation of a software module called an Inference Engine.

2. An embodiment of an inference engine of claim 1 that provides a real-time, rule-based inference system based upon matching data patterns within the agent's context.

3. A method to support the interpretation of rules within the inference engine of claim 1 and the specific embodiment of the same in claim 2.

4. A method that utilizes a software interface called a service adapter, to provide a generic way for system developers to specify how to handle service execution requests and service execution parameters. Agents use this service adapter to execute the platform services specified in claim 1.

5. A method that uses configuration data for selecting, adding and removing services, message transport systems, data encoding/decoding schemes, encryption schemes and software modules called message handlers and generators and any other configurable components to the system specified in claim 1.

6. A system for constructing intelligent agents, which is used by the agent lifecycle subsystem within claim 1 to create and deploy agents using a template mechanism.

7. A method for constructing and deploying agents in the system of claim 1 using the template mechanism of claim 6.

8. A method for using a graphical interface for specifying the templates in claim 6.

9. A method for using a computer language for specifying the templates in claim 6.

10. A method for using a graphical user interfaces for monitoring and configuring activities of the system of claim 1.

11. Methods for storing and recovering agents from persistent storage as needed for use in the system of claim 1.

12. A methods of using the event mechanism of claim 1 to support the graphical user interfaces of claim 10 and support systems for logging system activities.

13. Methods for applying the inference engine of claim 2 to problems involving the maintenance, control of power and distribution systems. This method is applicable to a wide variety of situations including but not limited to tracking of materials through various distribution systems whether they are electric power, chemical, oil and gas distribution systems or rail, ship and motor vehicle systems.

    This invention enables interaction between a plurality of organizational units including suppliers of such items as manufactured goods, producers of power from such sources as nuclear, hydro and fossil fuels, and suppliers of maintenance and security services. It also supports the interaction with the suppliers and the distribution organizations such as logistics companies, gas and oil pipeline companies and common carriers. Finally, it supports interactions with the consumers of goods and services including both individuals, commercial and government organizations.